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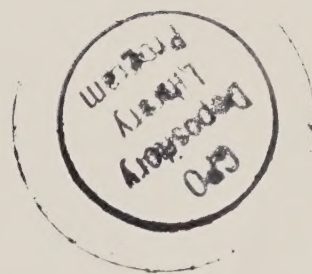
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National Center of Forest Health Management

Strategic Plan

USDA Forest Service
Morgantown, WV

June 1993

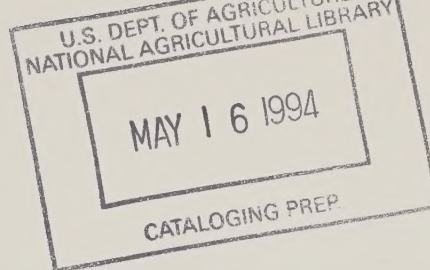


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Executive Summary

The Forest Service's emphasis on ecosystem management, biodiversity, and other non-commodity resource values has increased the need for forest health technologies that are specific and environmentally acceptable. Although considerable progress has been made in recent years in the development of new technologies for managing insects, diseases, and other disturbance factors, the need for additional technologies is critical. To satisfy this need, the National Center of Forest Health Management was established in Morgantown, WV, in April 1993 for the purpose of accelerating development and use of environmentally acceptable technologies to improve the health of America's forests.

The National Center of Forest Health Management has two goals:

1. With the help of partners, to promote and facilitate development and use of technologies to sustain or enhance forest health.
2. To advance understanding of forest health and of the effects that forest health technologies have on forest ecosystems and management objectives.

This Strategic Plan describes the need for the Center, and establishes its purpose, goals, areas of technical emphasis, and philosophy and mode of operation. This information and operating philosophy provide a basis for selection of projects, and development of annual and long-term plans of work. The activities of the Center will play a major role in implementing the new Forest Service Strategic Plan for Forest Health, "Healthy Forests for America's Future, A Strategic Plan."

The Center has a National scope of responsibility to address technology needs that are key for successful integrated pest management of major insects and diseases, and for the successful management of forest ecosystems. A small cadre of technical specialists and support staff will work in close cooperation with a variety of partners to accomplish high-priority technology development objectives. Thus, Center staff members will work closely with researchers and others to develop new technologies for operational use, and to more rapidly apply research findings.

The initial emphasis of the Center's work will include these:

1. Developing biorational treatment methods including pheromones and other behavior-modifying semiochemicals, and bacteria, viruses, fungi and other microbes.
2. Developing biological control methods including introduction of natural enemies, and enhancement of native species through augmentation and conservation approaches.
3. Evaluating effects of pest treatments and related management actions on nontarget organisms.

Other Forest Service units and other agencies share responsibility for research and development of these areas of emphasis. The National Center's role is to participate in such emphasis areas when a clear technology need exists and there is opportunity and need to accelerate technology development. The Center will work in full partnership with cooperators to develop quality and timely products. In the future, the areas of Center emphasis may be expanded or modified in response to technology development priorities.

Activities of the National Center will provide support for the National Forests, for lands managed by the Departments of Interior and Defense, and State and private lands. The need for accelerated development of forest health technologies is evident on most of these lands due to increased forest health problems, limitations of traditional pest controls, and related needs for new and safer technologies and preventive practices.

Introduction

The concept for a National Center of Forest Health grew from the recognition that additional technologies to improve forest health are urgently needed. Although there has been progress in development of new methods for managing forest pests, critical technology needs continue to exist for effective, environmentally-acceptable approaches to maintain or enhance forest health.

Our Nation's forests provide a multitude of resources that can contribute to the economic vitality of local and regional communities while providing clean air and water, diversity, wildlife habitat, scenic beauty, and recreational opportunities for millions of Americans. Everyone agrees that maintaining and improving the health of America's forests is one of our soundest investments. Trends in society's values and associated policies, however, are changing the environment and objectives by which management decisions are made and how resource management is then planned and conducted. Increasingly, the public and various stakeholders are demanding the use of management practices and technologies that minimize adverse environmental effects. This is especially evident where a native or introduced insect or disease requires management actions.

The recent adoption by the Forest Service of ecosystem management as its operating philosophy for National Forests and Grasslands has placed a greater emphasis on an ecological approach to management. The National Association of State Foresters has adopted a stewardship program for private lands. The result is an intensified need for new environmentally acceptable technologies for protecting and improving forest health. State and private cooperators also need these new technologies and practices. The Forest Service Strategic Plan, *Healthy Forests for America's Future: A Strategic Plan*, provides comprehensive guidelines and approaches to achieving this recent mandate.

This plan for the National Center of Forest Health Management is tiered to the Forest Service's plan in fulfilling key leadership and facilitative roles.

The purpose of the National Center is to accelerate development and use of environmentally acceptable technologies to maintain and improve the health of America's forests.

The National Center is further intended to support all elements of the **Forest Service Mission** of "Caring for the Land and Serving People," as well as the **11 Guiding Principles** for achieving the Mission. Especially relevant for achieving the Center's goals are the following Forest Service Mission elements and Guiding Principles:

Advocating a conservation ethic in promoting the health, productivity, diversity, and beauty of forests.

Developing and providing scientific and technical knowledge for improving our capability to protect, manage, and use forests and rangelands.

Forming partnerships to achieve shared goals.

Using an ecological approach to the multiple-use management of the National Forests and Grasslands.

Goals and Principles

Goals

The National Center has two **Goals**:

1. **With partners, promote and facilitate development and use of technologies to sustain or enhance forest health.**
2. **Advance understanding of forest health and of the effects that forest health technologies have on forest ecosystems and management objectives.**

Principles

The Principles provide guidelines for all National Center activities. They address the kind of work to be done, and the resources and mode of operation for accomplishment.

The Principles include:

1. A small cadre of technical specialists providing leadership for technology development.
2. Emphasis on partnerships with cooperators to accomplish work.
3. Mix of facilitation and active participation roles by Center staff.
4. Emphasis on environmentally acceptable biological methods to improve integrated pest management practices.
5. Focus on technology needs of multi-regional or national significance.
6. Strong product development objectives.
7. Approaches emphasize prevention and early intervention strategies.

8. Support achievement of ecosystem management and stewardship goals.
9. Priorities determined jointly by Center Staff, WO, Regions, and key partners.
10. Provide relevant and timely flow of information among participants and to a variety of external audiences.
11. Emphasis on effective technology transfer.

The first three principles are concerned with resources to accomplish Center responsibilities. A small core group of permanent staff consisting of a Center Director and up to six specialists plus support staff, will promote and facilitate the development and application of technologies and practices to improve forest health. The permanent staff may actively participate in some development projects, but to a greater degree they will apportion their efforts in outreach to partners and cooperators for purposes of arranging that key tasks are accomplished.

Other principles are concerned with the technical focus of the National Center, selection of priorities, and transfer of information. The philosophy for Center emphasis is consistent with society's overwhelming preference for ecologically sensitive technologies that are consistent with an ecological approach to natural resource management. Center projects will be responsive to resource management needs in both the short- and long-term, and with strong related emphasis on product development objectives. Priorities for the Center's Program of Work will be developed from inputs by the Center Staff, WO-FPM, FPM-Regions, key partners through the Regions, and key partners through the Board of Directors (see *Key Partners*). A national-level group of key partners and stakeholders (Board of Directors) will review Programs of Work, provide recommendations, and help foster cooperation and partnerships. The Washington Office FPM Director will have final authority for programmatic decisions.

Center Emphasis

Trends

Trends in values, policies, laws, and public opinion can be extremely influential on the decisions and policies associated with natural resource management. The following issues were identified in part by polling Regions and cooperators about future trends in forest health issues. Collectively, these trends have helped shape the direction of work emphasis for the National Center.

Major trends include these:

1. Increasing **pest risks due to management and use** patterns in forests and urban/forest interface situations.
2. Increasing **pest risks from exotic species** due to increased international trade and travel.
3. Increasing emphasis on **prevention or early treatment** for insect and disease management.
4. Increasing preference for managing insect and disease populations with **environmentally acceptable biological agents**.
5. Greater acceptance of the concept of an **ecological approach to natural resource management**.
6. Greater **variety and value of nontimber resources**.
7. Greater involvement by the **public and diverse interest groups** in natural resource management.
8. Further reduction in the **use of chemical pesticides**.
9. Increasing demand for **technical assistance internationally**.

Work Emphasis

When a clear technology need exists, the National Center may participate in program areas that in some cases overlap with other Forest Service units and cooperators. The Center will work with these groups in full partnership to achieve a timely resolution and quality product. The Center will be involved in technology development of biorational methods of pest control, biological control of pests, and nontarget effects of pest management actions. These program areas of Center activity may be expanded or otherwise modified in the future in response to technology development priorities, and as funding and resources permit.

Broad areas of work are:

1. Biorational treatment methods (pheromones, virus, bacteria, fungi).
2. Biological control methods for pest management.
3. Nontarget effects of pest treatments and related management actions.

These areas represent a wide range of work responsibility, but given the charge of addressing only priority technology needs, and relying primarily on joint efforts with partners and cooperators, the Center's assignment can be viable and highly productive. The National Center's role is to complement existing work, and in some cases to accelerate and facilitate work where key technology needs exist. The Center will not initiate development and application of models, remote sensing, or impact assessment. These technology development activities are assigned to the Washington Office Methods Application Group (MAG).

Biorational methods

This area of emphasis includes the pheromones and other semiochemicals, plus microbial pesticides formulated from pathogenic microbes such as viruses, bacteria, fungi, microsporidia, and nematodes. Pheromones and other semiochemical approaches depend upon inducing pest population or natural enemy behaviors that will reduce pest populations, or reduce pest activity associated with the resource requiring protection.

The microbial pesticides or antagonists are usually composed of sprayable mixtures of the organism (or a toxic derivative) that can be applied to host vegetation in such a way that the pest will become infected, thus reducing its capacity to cause adverse impacts on forest resources. Microbial pesticides are generally supplied as spray preparations to suppress pest insects, particularly the defoliators. There may be other ways to apply these materials, however, as well as opportunities to develop microbial formulations to control root diseases and other tree pathogens (see also under **biological control**).

In addition to these approaches, it is possible that additional biologically based approaches will be discovered that will qualify for National Center work activities. Development of the biorational methods will include application technology and the regulatory process of pesticide registration (where appropriate) as an integral part of the technology development process.

Biological control

This approach to pest management refers to the use of living organisms as natural enemies of the pests. In most cases, this approach will involve introducing exotic predators, parasites, or pathogens to combat introduced pests such as the gypsy moth or pine shoot beetle. Biological control, however, also includes augmenting, conserving, or enhancing native species of natural enemies, through manipulations designed to increase their effectiveness. In addition, importation of natural enemies for use against native pests may, in some cases, be considered for Center projects.

Biological control projects by the National Center are expected to be closely coordinated with USDA Forest Service Research (*especially Forest Insect and Disease Research [FIDR]*), USDA Animal and Plant Health Inspection Service's (APHIS) National Biological Control

Institute, USDA Agricultural Research Service (ARS), and the efforts of other Federal and State organizations or international biological control research and development institutions.

The most common examples of classic biological control involve importing exotic parasites or predators of pest insects. Other applications of introduced natural enemies involve their use for combatting unwanted vegetation (particularly introduced weeds), and to reduce impacts caused by tree pathogens. Other agencies, APHIS and ARS in particular, have the lead responsibilities for importing, screening, and releasing species to control weeds. FIDR is the key group developing the use of insects to control weeds in Hawaii. The Forest Service also has played a major cooperative role in facilitating the release and assessing the effectiveness of natural enemies of unwanted vegetation on National Forests. For certain conditions there may be important roles for the Center in this activity.

Nontarget effects

This area of emphasis generally refers to assessments for possible adverse effects of treatments on nontarget organisms or other ecosystem components. This includes direct effects upon nontarget species themselves, or, it may involve indirect effects upon other species that are in some way dependent upon the species directly affected. An example might be a bird or mammal that is dependent upon nontarget Lepidoptera that are directly affected by a microbial insecticide spray applied for gypsy moth suppression.

A further dimension of this area of work is the assessment of other management decisions (other than decisions for suppression treatments) that may affect ecosystem health values associated with pest populations. Such ecosystem components, in addition to nontarget species, may include stream and water quality, scenic beauty, and habitat integrity. An example is an assessment of a management decision not to apply a suppression treatment for a defoliator such as spruce budworm or gypsy moth. The ensuing defoliation could in some cases cause substantive impacts to associated species, other ecosystem components, or both.

Linkages

Healthy Forests for Americas Future

The Forest Service Strategic Plan for Forest Health, "Healthy Forests for Americas Future: A Strategic Plan," has several goals and actions that call for support by the Center. Proposed National Center activities are closely linked with the Agency's Strategic Plan for dealing with pest treatment technologies and management of introduced pests. The three areas of work listed for the National Center (see *Work Emphasis*) strongly support these and other goals and actions in the Strategic Plan for forest health.

Management Needs

The National Center must be especially responsive to the needs of those practicing natural resource management. The objectives of Center studies and other activities will be designed to produce products or otherwise solve management problems with maintaining or improving forest health. The needs of managers may vary with their perspectives and problems associated with specific ownerships and management objectives. That is, management objectives for State or private land could readily vary from those for National Forests. The Center will be assisted in its perspective and planning for such diverse needs by the participation of cooperators and key partners in identifying priority areas of work. Management needs and National Center work priorities will, over time, be subject to modifications associated with societal trends, resource values, public policies, laws, and changes in natural resource conditions. Consequently, feedback mechanisms from managers to developers should be a dynamic process that continually drives the technology development process toward improving methods, and the natural resource management process toward its desired condition (Figure 1).

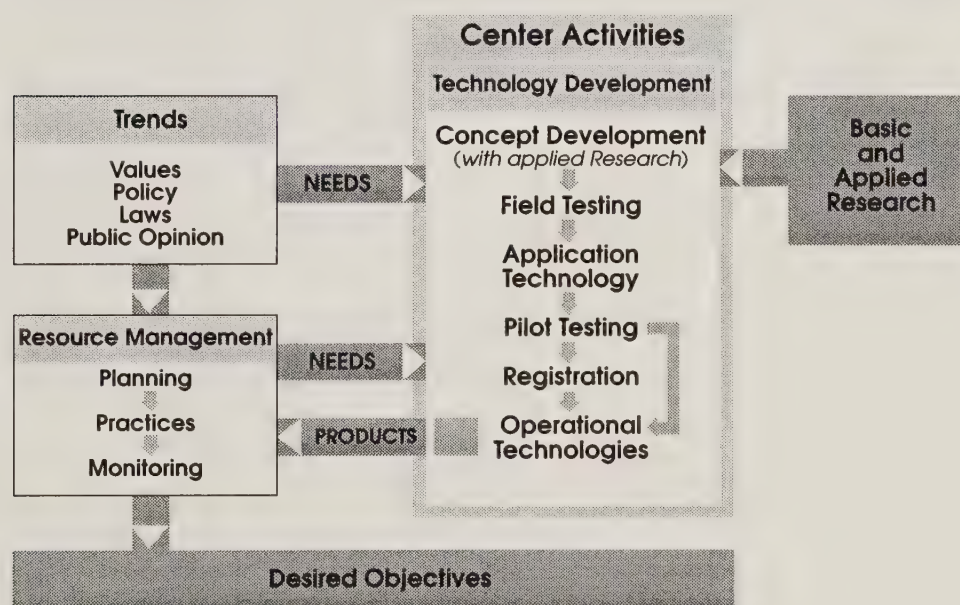


FIGURE 1. Feedback from natural resource managers drives the technology development process.

Research Needs

The Center staff will maintain a close working relationship with the research community, and particularly those conducting studies pertinent to the Center's work emphasis areas. As Forest Service Research units and other research organizations obtain new and relevant results, the Center staff will form partnership projects to expedite advancement of this knowledge into new technologies and practices to protect and improve forest health.

Key Partners

Because management objectives may vary considerably by jurisdiction, perspective, or ownership, the National Center must interact on a continual basis with numerous cooperators and partners. This interaction will influence priorities for technology development. Partnership in technology development will also increase resources and provide joint ownership, to ensure effective transfer of technology into broad application and understanding. Partners and cooperators of the National Center include but are not limited to the following:

Forest Service, Forest Pest Management (FPM) units.

National Association of State Foresters (NASF).

State forest pest management cooperators.

Forest Service, Research (FIDR and other staffs).

Forest Service, International Forestry.

Other Forest Service units.

USDA Animal and Plant Health Inspection Service (APHIS).
National Biological Control Institute (APHIS-NBCI).

USDA Agricultural Research Service (ARS).

Other Federal agencies (Environmental Protection Agency, Bureau of Land Management, Bureau of Indian Affairs, Fish and Wildlife Service, National Park Service, Departments of Navy, Air Force, and Army).

Universities.

Forest-based industries.

Forest health technology contractors and industries.

Environmental interests.

International cooperators/agencies (Forest Pest Management Institute-Forestry Canada).

Representatives of the public agencies in the above list may periodically be requested to serve on a Board of Directors for the National Center. This board will provide executive review and program recommendations of National Center activities (see *Operations Plan*).

Operations Plan

Program Management

The following sections describe the process and procedures that will be used to administer and direct the National Center of Forest Health Management. They include management structure and responsibilities, planning and funding, and monitoring and reviewing Center activities.

Management structure and responsibilities

The scope and complexity of the National Center require an integrated system of management with executive review and oversight. The management structure will consist of a Center Director, administrative direction from the Northeastern Area, State and Private Forestry Assistant Director, program direction from the WO-FPM Director, and review and program recommendations from a Board of Directors that includes key partner representation.

The Center Director manages the National Center and is responsible for:

Administrative, managerial, and policy liaison between the Northeastern Area Director, Director of WO-FPM, and the Center Board of Directors.

Developing and administering Center budgets, including planning and initiatives.

Day-to-day coordination and oversight of nation-wide Center activities.

Developing 5-year and annual plans of work consistent with the Center Strategic Plan, National Management direction to the Center, and technical needs identified by Regions, Steering Committees, and partners and cooperators.

Ensuring projects are developed under direction of Center Staff as needed to support 5-year plans and achievement of sequential objectives and products.

Developing partnerships and related outreach for expertise needed to solve natural resource management problems and develop technology products.

Developing and using approved procedures for granting funds to partners for responding to technology development needs (proposal requests, reviews, allocations).

Conducting annual reviews of individual technical projects.

Supervising Center staff.

Developing, implementing, and monitoring appropriate quality assurance/quality control (QA/QC) requirements.

Developing effective data management system, and coordinating continuation of the technology development process.

Leading the integration and synthesis of forest health technologies, and advancing the understanding of forest health technologies and their capabilities for meeting ecosystem management and stewardship goals.

Providing an annual accomplishment report, and ensuring documentation and reporting of projects and results.

Administrative direction for the National Center comes from the Northeastern Area (NA) Director through the Assistant Director of Forest Health Protection with the responsibilities of:

Supervising the Center Director.

Maintaining liaison with WO-FPM and Center Board of Directors.

Coordinating budget activities, including out-year planning and initiatives.

Ensuring necessary administrative support for Center activities.

Program direction for the National Center is provided by the FPM-WO Director and includes the following responsibilities:

Maintaining liaison with NA, other Forest Service Regions, and Center Board of Directors.

Coordination of the Center's Program with other FPM units, other Forest Service units, other agencies, and international interests.

Providing leadership in setting policies and program direction for the Center.

Providing leadership in setting priorities, ensuring coordination, assigning initiatives for out-year planning and budget activities.

Reviewing of Center activities and accomplishments.

Review and Program recommendations by a Board of Directors, that could, for example, include representatives of the National Association of State Foresters (NASF), APHIS, ARS, National Plant Board, and USDA-Forest Service WO Directors of FPM, FIDR, will include the following activities:

Reviewing the National Center's plans of work.

Providing recommendations for broad technology needs and objectives of the Center.

Periodically reviewing the Center's effectiveness.

Reviewing interagency and international coordination.

Fostering interagency and international cooperation.

Planning and funding

With continual coordination with the WO-FPM, the Center Director initiates the long-term and annual planning process. Direction for project priorities, policy, and funding information will be supplied from the WO-FPM Director after consideration of needs inputs from various sources (Figure 2), and funding resources. This information is the basis for drafting the Center's plans of work, which outline specific objectives and the approaches for achieving them. Figure 2 shows the activity sequence for development, review, and approval for plans.

Project Selection

Long-term plans (5-year) and annual work plans will be developed. The process for developing plans will be initiated by the Center Director; and, at the Director's discretion, may include requests to the Regions and cooperators for suggested Center activities. The Center Director may also convene groups of technical experts to assist in short- and long-term planning of program activities within the three areas of Center emphasis. The National Center will have the continuing responsibility to maintain close contacts with FPM field offices and cooperators, to sense changing needs and priorities for ongoing and future Center activities.

The Center Director will draft annual plans of work or 5-year plans based on recommendations from the above mentioned groups of technical experts, and with consideration of inputs from the Regions, cooperators, partners, WO-FPM, and international contacts. Recommendations for Center activities will be proposed in accord with the selection criteria listed below. The Center Director will also adhere to these criteria in recommending Center priorities. The Center Director will recommend 5-year plans and annual plans of work to the WO-FPM Director.

The Board of Directors will review the National Center's plans, and recommend their adoption or modification. Final approval of proposed Center plans and activities resides with the Director of WO-FPM. Figure 2 diagrams the flow of events for developing, reviewing, and approving Center plans.

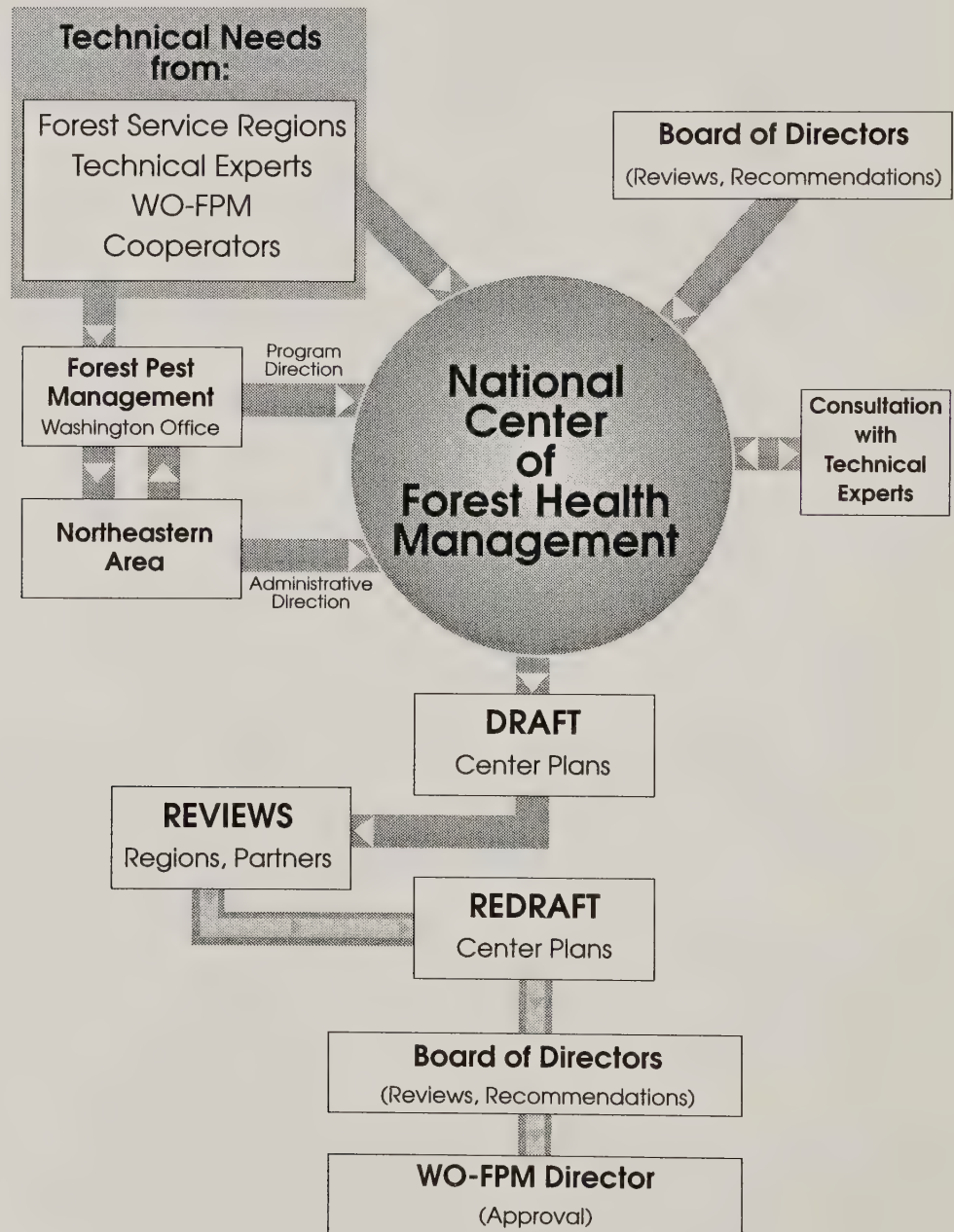


FIGURE 2. Process and roles for developing plans of work for the National Center of Forest Health Management.

National Center plans include specific problems to be studied, reviews of the research basis for the activities, analysis of alternative project approaches, and specific proposals for approaching the study or other activity. As appropriate, the plans may also specify QA/QC procedures, data quality objectives, and data formats. Specialists then prepare

proposals or study plans for the specific work designated in the Center plan. These proposals detail specific procedures to accomplish objectives identified in the Center plan and are reviewed by a peer review panel assembled by the Center. An integrated funding package—including the Center Plan, the individual study plans and proposals, and a quality assurance plan—is then prepared, and funds are dispersed to the cooperators to implement the projects.

Selection Criteria

The Center Director and Staff may develop these and appropriate additional criteria to assist in quantifying the process for project selection. National Center studies and activities will meet these criteria:

1. Support the USDA Forest Service's "Healthy Forests for America's Future: A Strategic Plan."
2. Coordinate with projects and activities of other FPM units (Regions, Methods Applications Group, WO), Steering Committees, Technology Development Projects, and cooperators.
3. Have multi-regional or national interest.
4. Complement other FPM and cooperator efforts, with emphasis on technology gaps not being addressed by others or requiring accelerated efforts.
5. Be responsive to needs for ecological approaches to management.
6. Take initiative in forming partnerships with research, to develop promising new findings into useful technology.

Monitoring and review

National Center management must have means to monitor and review the progress and current status of all specific project activities. Several monitoring and review mechanisms will be instituted, and plans for others are being considered.

Communications and Information Management

Communications and information management will be required to ensure a constant flow of timely and accurate information. Information must flow internally among the Center Staff, cooperators, partners, the Northeastern Area Forest Health Protection Staff (administration), the Washington Office Forest Pest Management Staff (executive and technical direction), and the Board of Directors. In addition, each of these groups has external audiences (individuals and groups not directly involved with the Center) with interests in Center activities.

The National Center's Information and Technology Transfer Plan will provide a mechanism to insure that accurate and timely messages are provided to audiences described above. The Center's technology transfer staff will prepare, maintain, and implement the Information and Technology Transfer Plan.

The Information and Technology Transfer Plan will identify key internal contacts by name, address, telephone, fax, and electronic communications address. The plan will be updated continually. It will describe vehicles for communications (publications, videos, electronic, etc.) to best communicate Center activities to various audiences.

The Information and Technology Transfer Plan will list information objectives needed to help meet Center goals. In addition to the timely and effective transfer of information and technology, the Center will also collect and maintain cumulative data files needed to support registration of biorational agents, and for other Center activities requiring such a repository. These repository files will be maintained on a permanent basis.

Quality assurance audits are a powerful tool for monitoring the way projects are conducted. These audits are formal reviews of QA/QC activities to determine compliance with the QA Project Plan (and work plan) and national documentation. Audit reports provide the following: (1) reassurance to management that quality data are being produced (at a known cost); (2) periodic status reports on programs; and (3) identification of modifications and adjustments to data collection and analysis. Audits are recommended by the Board of Directors, with the actual frequency being determined by the Center Director and based upon the stage of individual projects, past performances, and the intended use of the data. Good Laboratory Practices will be followed, as appropriate.

An audit report will be distributed to the Center Director, summarizing audit reports by project or by groups of projects. Problems are resolved as efficiently as possible by a QA Specialist.

Peer reviews of project proposals and study plans are essential for ensuring the highest quality work is provided through Center activities. Methods development plans submitted by principal investigators for Center sponsorship will receive peer review. Depending upon the subject area and affiliation of project participants, the peer reviews may be conducted by the Center's staff, other Forest Service scientists or specialists, or scientists or specialists from outside the Forest Service.

Staffing

In its first five years of operation, Center staffing will grow into the following position structure:

Center Director

Program Manager for Biorationals

Program Manager for Biological Control

Program Manager for Nontarget Effects

Program Analyst

Secretary/Staff Assistant

Technology Transfer Specialist

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